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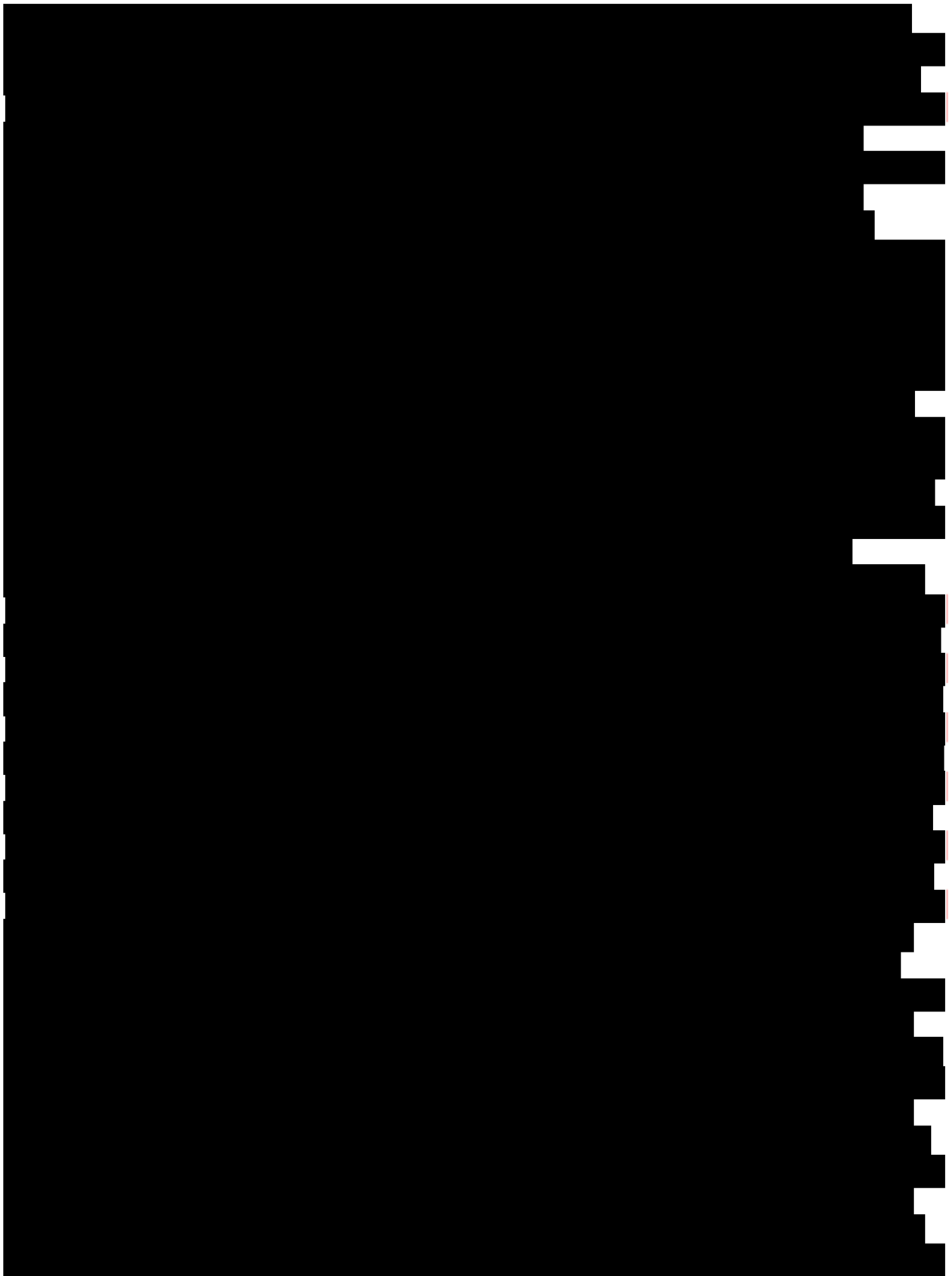
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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]





Effects Characterization

1 Introduction

Methomyl is a carbamate insecticide that acts by inhibiting cholinesterase activity, thereby preventing the natural breakdown of various choline and ultimately causing the neuromuscular system to seize. This may lead to a series of various effects, which may culminate in death. The effects of methomyl have been studied extensively in many taxa, particularly in fish and aquatic and terrestrial invertebrates. Studies include acute and chronic laboratory studies with either technical or formulated methomyl, and include both registrant-submitted and open literature studies.


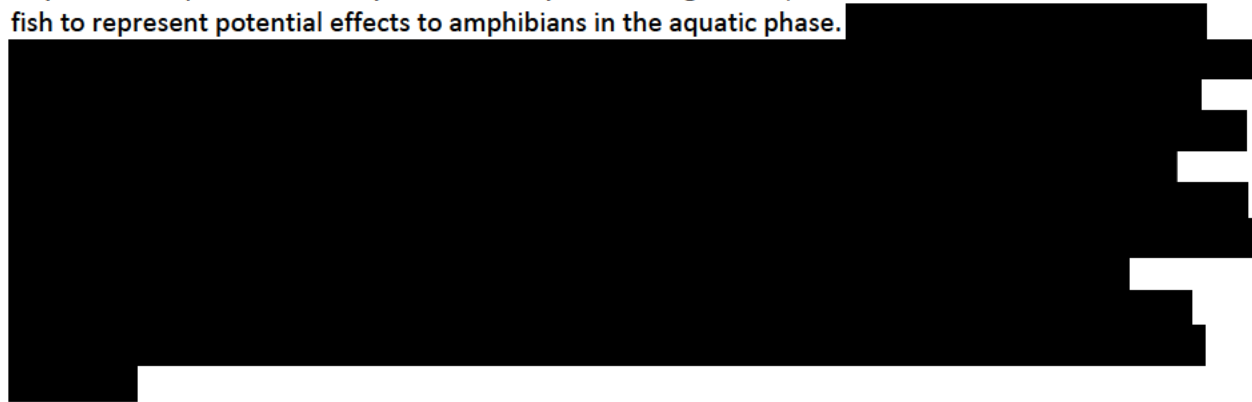
The toxicity data for each taxon are generally presented as summary data arrays developed using the Data Array Builder v.1.0. The arrays may contain data from both laboratory and field experiments (*e.g.*, mesocosm). Data in these arrays are grouped by the type of effect (*e.g.*, behavior, reproduction, mortality), and present the range of LOAECs and NOAECs (NOAECs must have a corresponding LOAEC to be represented in array) for each effect type. Each of the effect types are discussed in further detail within each taxon effect characterization. For aquatic organisms, the data in the array represents exposure units of $\mu\text{g/L}$. For birds (and terrestrial-phase amphibians and reptiles) and mammals, the data is expressed in units of mg/kg-diet , $\text{mg/kg-body weight (bw)}$, and/or lb a.i./acre . Toxicity data for terrestrial invertebrates are expressed as $\mu\text{g/bee}$, mg/kg-soil , mg/kg-bw , and lb a.i./acre . Data are expressed as lb a.i./acre for terrestrial plants.



2 Effects Characterization for Fish and Aquatic-Phase Amphibians

2.1 Introduction to Fish and Aquatic-Phase Amphibian Toxicity

The effects of methomyl have been studied extensively in fish. Acute, early-life-stage, and full life cycle studies for fish have been submitted by the registrant. It should be noted that EPA does not typically request toxicity studies for amphibians from pesticide registrants, but rather uses data on freshwater fish to represent potential effects to amphibians in the aquatic phase.



2.2 Threshold Values for Fish and Aquatic-Phase Amphibians



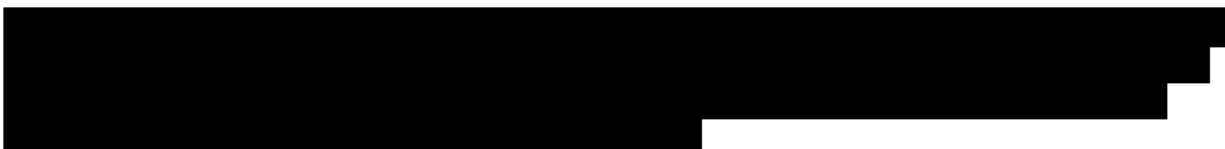




¹Last methomyl refresh, March 15, 2016.

3 Effects Characterization for Aquatic Invertebrates

3.1 Introduction to Aquatic Invertebrate Toxicity

The effects of methomyl on aquatic invertebrates have been studied extensively, including both freshwater and estuarine/marine (E/M) invertebrates. There are registrant submitted studies involving aquatic invertebrates, including acute and chronic laboratory studies with technical methomyl.



4 Effects Characterization for Aquatic Plants

4.1 Introduction to Aquatic Plant Toxicity

Methomyl is an N-methyl carbamate insecticide which acts through inhibition of acetylcholinesterase.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5 Effects Characterization for Birds

5.1 Introduction to Bird Toxicity

There are open literature and registrant submitted studies involving birds, including acute oral, sub-acute dietary, reproduction and field studies with technical or formulated methomyl. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

8 Effects Characterization for Mammals

8.1 Introduction to Mammal Toxicity

The effects of methomyl on mammals have been studied extensively. There are registrant submitted and open literature studies involving mammals, including acute and chronic laboratory studies with technical methomyl. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Methomyl was evaluated by USEPA's HED RED (USEPA 1998) and the Revised N-Methyl Carbamate Cumulative risk assessment (USEPA 2007), and more recently the 2010 Methomyl Registration Reviews Scoping Document (USEPA 2010).

[REDACTED]

8.5.3 Inhalation studies

Multiple studies for inhalation exposure are available from information provided by HED as reported in

[REDACTED]

[REDACTED]

[REDACTED]		[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	MRID 48226104 (91.12% a.i.)

9 Effects Characterization for Terrestrial Invertebrates

9.1 Introduction to Terrestrial Invertebrate Toxicity

Methomyl, is an insecticide that acts through inhibition of acetylcholinesterase and is used to kill a broad range of insects and mites. As an insecticide, methomyl's effects on terrestrial invertebrates has been well documented in the literature.

